

REMARKS

By this amendment, applicants have amended the claims to more clearly define their invention. In particular, Applicants have amended claim 11 to be in independent form by including therein all of the limitations of claim 7, from which claim 11 previously depended. Claim 11 has been amended to include therein the limitations previously recited in claims 9 and 12, and inter alia, to recite that the binder resin comprises ethylene-norbornene copolymer resin and that it is Mw/Mn is 22.6 to 27.5. Claims 7, 9 and 12 have been canceled without prejudice or disclaimer and new claims 13-23 added to define further aspects of the present invention. Claims 8 and 10 have been amended to depend from and be consistent with claim 11.

The foregoing amendments to the claims are supported by, e.g., paragraphs 0010, 0012, 0014, 0018, 0019, 0026 and 0029 of Applicants' specification.

In view of the cancellation of claims 7, 9 and 10 and the change of dependency of claim 11, the rejection of claims 7-10 under 35 U.S.C. 102(b) on page 2 of the Office Action is moot.

Claims 11 and 12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-275905 in view of U.S. Patent Application Publication No. 2002/0042011 A1 Anno et al. Applicants traverse this rejection and request reconsideration thereof, in at least insofar as it applies to the presently amended claims.

The present invention relates to a toner for developing electrostatic charge images. The toner of the present invention comprises at least binder resin, colorant, and charge control agent. The charge control agent comprises a positive-charge type low molecular weight polymer in which quaternary ammonium salt type

functional groups are added to a styrene-acrylic main chain or a negative-charge type low molecular weight polymer in which sulfonic acid type functional groups are added to a styrene-acrylic main chain. The binder resin comprises ethylene-norbornene copolymer resin having at least two peaks in molecular weight distribution measured by gel permeation chromatography and comprises high molecular weight fraction having number average molecular weight of 7,500 or more at 5 to 50 weight % to the binder resin, and Mw/Mn is 22.6 to 27.5.

According to the present invention, the non-offset temperature at the lower side of the toner can be sufficiently decreased by controlling Mw/Mn of the binder resin at 22.6 to 27.5, and, moreover, deterioration of heat-response properties can be prevented by combining the specific charge control agent (the low molecular weight polymer set forth in claim 11) and the specific binder resin which contains a high molecular weight fraction having number average molecular weight of 7,500 or more at 5 to 50 weight %.

The above effects are clearly demonstrated by the examples in Applicants' specification. That is, as shown in Examples 1 to 5 of the specification, when the specific binder resin and the specific charge control agent are combined as described above, sufficient image density is obtained, fogging or blade contamination does not occur, and non-offset temperature at the lower side of the toner decreases. Additionally, it is shown that heat response properties have no problem in practice, even if continuous copying of 10,000 sheets is carried out by a commercial printer. In contrast, as shown in the Comparative Examples 1, 2, 6 and 7 in which the specific binder resin of the present invention is not used, that image density is decreased, fogging or blade contamination occurs, and non-offset temperatures at the lower side of the toner is high. In particular, Comparative

Examples 1 and 6 show that fogging remarkably occurs, since the heat response properties are insufficient under low-temperature and low-humidity environmental conditions. Additionally, in Comparative Examples 3 to 5, in which the specific charge control agent of the present invention is not used, it is shown that while image density and fogging are superior, non-offset temperature at the lower side of the toner is highly maintained.

Japanese Unexamined Patent Application Publication No. 200-275905 discloses a toner for developing electrostatic charge images comprising binder resin, colorant, and charge control agent, in which the binder resin is substantially cycloolefin resin consisting of only repeated structure units derived from cycloolefin monomer, and as a charge control agent, FCA-2001-PS and FCA-1001-NS produced by Fujikura Kasei Co., Ltd., as described in paragraph numbers [0024]] and [0040] of this document.

In addition, United States Patent Application Publication No. 2002/0042011A1 discloses a toner particle in which colorant and polymer (B) are dispersed in binder resin (A), and as a polymer (B), TOPAS-COC as described in paragraph number [0040] of this document.

However, Japanese Unexamined Patent Application Publication No. 2000-275905 does not describe that Mw/Mn of the binder resin is 22.6 to 27.5 and that deterioration of heat-response properties can be prevented by combining the specific charge control agent the low molecular weight polymer set forth in claim 16) and the specific binder resin which contains a high molecular weight fraction having number average molecular weight of 7,500 or more 5 to 50 weight %.

Likewise, United States Patent Application Publication No. 2002/0042011A1 (Anno et al.) does not describe that deterioration of heat-response properties can be

prevented by combining the specific charge control agent (the above low molecular weight polymer set forth in claim 11) and the specific binder resin which contains a high molecular weight fraction having number average molecular weight of 7,500 or more at 5 to 50%.

The Examiner alleges that “[b]ased on the expectation of improved properties the artisan would have ample motivation to use this resin, such as the tradename resin identified above, in the invention of the JP document.” However, the Examiner does not explicitly set forth why one of ordinary skill in the art would have an “expectation of improved properties.” Accordingly, the Examiner has not set forth any apparent as to why one of ordinary skill in the art would have combined the teachings of the respective documents in the manner urged in the Office Action. Therefore, the Examiner has not established a *prima facie* case of obviousness.

Moreover, even assuming, arguendo, that the Examiner has established a *prima facie* case of obviousness, it is submitted the presently claimed invention provides unexpectedly advantageous results as demonstrated by Examples 1-5 in Applicants’ specification in contrast to Comparative Examples 1-7. Therefore, even assuming, arguendo, that the Examiner has established a *prima facie* case of obviousness, it is submitted the *prima facie* case is overcome by the evidence of unexpected results in Applicants’ specification.

For the foregoing reasons, it is submitted the presently claimed invention is patentable over the proposed combination of documents.

In view of the foregoing amendments and remarks, favorable reconsideration and allowance of all of the claims now in the application are requested.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing

of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 1150.46772X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

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